*Fact Sheet* *April 2013*

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Water

# Draft Total Maximum Daily Load (TMDL) for Iron and Manganese in Red Lake/Anton Road Pond, Alaska

**TMDL Essential Facts:**

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|---|---|
| *Alaska ID Number:* | AK-20701-48 |
| *Criteria of Concern:* | Toxic & Other Deleterious Organic and Inorganic Substances: Total Recoverable Iron and Manganese |
| *Designated Uses Affected:* | (1) water supply; (2) water recreation; and (3) growth and propagation of fish, shellfish, other aquatic life, and wildlife |
| *Major Source(s):* | Urban Runoff (specifically, landfill drainage) |
| *Loading Capacity:* | Water: 1,000 µg/L iron; 50 µg/L manganese |
| *Wasteload Allocation:* | Not Applicable |
| *Load Allocation:* | Water: 1,000 µg/L iron; 50 µg/L manganese |
| *Margin of Safety:* | Implicit through conservative assumptions |
| *Future Growth:* | Water: 1,000 µg/L iron; 50 µg/L manganese |

**Total Iron and Manganese Measured as Water Concentrations (µg/L)[a]**

| Waterbody | Pollutant | Loading Capacity | WLA | LA | MOS | Future Growth | Maximum Observed[b] | Percent Reduction to Meet LA |
|---|---|---|---|---|---|---|---|---|
| Red Lake | Iron | 1,000 | NA | 1,000 | Implicit | 1,000 | 3,160 | 68% |
| Anton Road Pond | Iron | 1,000 | NA | 1,000 | Implicit | 1,000 | 12,600 | 92% |
| Red Lake | Manganese | 50 | NA | 50 | Implicit | 50 | 1,030 | 95% |
| Anton Road Pond | Manganese | 50 | NA | 50 | Implicit | 50 | 728 | 93% |

[a] Applicable water quality criteria for iron and manganese apply year round in Red Lake and Anton Road Pond.
[b] Maximum observed since 1999 drainage upgrades.

## What is the status of Red Lake/Anton Road Pond water quality?

Red Lake/Anton Road Pond do not fully support their designated uses of water supply; water recreation; and growth and propagation of fish, shellfish, other aquatic life, and wildlife due to elevated concentrations of iron and manganese in the water column and sediment.

The water column has concentrations of iron and manganese that exceed state water quality standards. In 1994, the State of Alaska listed portions of Red Lake/Anton Road Pond as an impaired waterbody under the Federal Clean Water Act Section 303(d) for iron and manganese pollution.

## How did this waterbody become polluted?

How the excess concentration of iron and manganese enter Red Lake/Anton Road Pond are not precisely known. The waterbodies are located adjacent to a 7.6-acre landfill site that was used by the U.S. Navy for the disposal of solid wastes from the early 1940s to 1972. When the landfill stopped operating, it was covered with some soil and partially graded. At the time, no engineering or access controls, such as a liner, cover, or leachate treatment, were implemented. The State of Alaska did not have landfill closure regulations at that time.

Historic landfill surface drainage is the expected primary source of iron and manganese to Red Lake/ Anton Road Pond. Groundwater drainage may be a current source. In addition, the recycling of iron and manganese sediment at the bottom of the lake may play a role.

## Why be concerned about the iron and manganese concentrations?

At certain concentrations these metals are toxic and tend to accumulate in organisms, such as insects. The excess metals can impact the organism and can move up the food chain from the aquatic insects to fish and other species. Polluted water can also affect fish and wildlife through direct contact and consumption.

Iron and manganese exhibit potential toxicity to aquatic life; therefore controlling their concentration in Red Lake/Anton Road Pond is important not only to protect the environment but ultimately to protect human health.

**What is a Total Maximum Daily Load (TMDL)?**

A TMDL basically represents a "pollutant budget" for a waterbody. It identifies the maximum amount of a pollutant that can enter the waterbody (Red Lake/Anton Road Pond) while the waterbody still meets the water quality criterion. A TMDL is established to meet the requirements of Section 303(d)(1)(C) of the Clean Water Act and the U.S. Environmental Protection Agency's regulation that requires the establishment of a TMDL for the achievement of water quality criteria when a waterbody is impaired.

**What are the parts to a TMDL?**

Similar to developing a budget for a business with different expense codes, a TMDL identifies different pollutant sources to calculate an overall pollution budget. The TMDL looks at the overall amount of discharges Red Lake/Anton Road Pond can receive and calls this the loading capacity. The TMDL then divides that pollution capacity into four different sources. First, permitted sources receive a budget, called a wasteload allocation, for point sources such as a discharge from an industrial facility. The second source is the unpermitted nonpoint sources like the run-off from nearby roads. Third, the pollution budget recognizes there may be future growth and other potential discharges to the lake and incorporates this into the calculation. Lastly, the TMDL budget includes a margin of safety to account for any unknowns.

**What pollution limits does this TMDL set?**

The Red Lake/Anton Pond TMDL pollution budget is straightforward in setting the limits equivalent to Alaska's state water quality standards of 1,000 µg/L for iron and 50 µg/L for manganese in the water column.

There are no existing discharges. Future discharges will need to meet these limits.

**How will the lake water quality be improved?**

Steps to address the impairment on Red Lake/Anton Road Pond have been taken. The amount of water flowing to/from the landfill has been reduced. More information is needed in order to determine the most cost effective next steps. The Department of Environmental Conservation Contaminated Sites Program is currently leading a coordinated effort with the U.S. Coast Guard and the U.S. Army Corps of Engineers. This group will develop a comprehensive remedy to appropriately address Red Lake/Anton Road Pond water quality.

**When might the impairment status be removed?**

It will likely be many years before the impairment status is removed. Additional studies are needed to determine the best methods to reduce the pollution. Those methods then need to be implemented. Following pollution reduction actions, follow-up water quality monitoring will be conducted to assess progress. At least two years of data showing concentrations meeting water quality criteria will be necessary to remove the impairment status.

**How can I learn more about the draft TMDL or make comments?**

A public review and comment period for the draft TMDL is underway. Written comments must be mailed, faxed, e-mailed, or hand delivered to the address below before 5:00 PM on May 13th , 2013.

DEC will hold a public information meeting to discuss the draft TMDL at the Kodiak Public Library, 319 Lower Mill Bay Road, Kodiak AK 99615 starting at 4:30PM on April 24, 2013.

The draft TMDL and recommendations are available at DEC's Red Lake/Anton Road Pond website at:
http://www.dec.state.ak.us/water/wnpspc/protection_restoration/watersnspotlight/index.htm
Or upon request by contacting:

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Answers to commonly asked questions about TMDLs in general can be found on the DEC website at: http://dec.alaska.gov/water/tmdl/pdfs/Commonly_asked_questions_about_TMDLs_Final.pdf